

## GALICIAN HYDRAULIC POWER TAX: AN ENVIRONMENTAL TAXATION MODEL FOR UNDERDEVELOPED NATIONS?

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### SUMMARY

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### Abstract

Modern economies have an increasing demand of electricity, which causes an environmental impact, of greater or lesser intensity depending on the means used. In order to achieve sustainable development, States must adopt more environmentally-friendly policies in energy production. To this end, European Union countries have instituted a host of environmental taxation instruments aimed at ensuring energy-efficiency and environmental protection. At the same time, developing countries also face environmental pressures, even if their legal and institutional frameworks tend to lag behind those of more advanced economies. This paper analyses the applicability of these models of taxation to developing countries, assessing the specific case of one of the more recent tax models, the hydropower tax instituted in the Autonomous Community of Galicia (Spain). Thus, we assess the advantages and disadvantages of this hydropower tax; its implementation in Galicia; and, finally, to what extent it provides an adequate model for developing countries.

**Keywords:** environmental protection, water policy, extrafiscality, environmental taxation, hydroelectric canon of Galicia.

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## Resumen

Las economías modernas tienen una demanda creciente de electricidad, que causa un impacto medioambiental, de intensidad mayor o menor según el medio usado. Para alcanzar el desarrollo sostenible, los Estados deben adoptar la política más ecológica en la producción de energía. Con este fin, los países de la Unión Europea han instituido una multitud de instrumentos de impuestos ambientales apuntados a la aseguración de la eficiencia energética y la protección de medio ambiente. Al mismo tiempo, los países en vía de desarrollo también afrontan presiones ambientales, incluso si sus marcos legales e institucionales tienden a llevar retraso con respecto a, aquellos de economías más avanzadas. Este artículo analiza la aplicabilidad de estos modelos de impuestos a países en vía de desarrollo, evaluando el caso específico de uno de los modelos más recientes fiscales, el impuesto de hidroelectricidad instituido en la Comunidad Autónoma de Galicia (España). Así, evaluamos las ventajas y las desventajas de este impuesto de hidroelectricidad; su puesta en práctica en Galicia; y, finalmente, en qué medida esto proporciona un modelo adecuado para países en vía de desarrollo.

**Palabras clave:** protección del medio ambiente, política de agua, extrafiscalidad, impuestos medioambientales, canon hidroeléctrica de Galicia.

## 1. Introduction

Throughout the twentieth century, large dams have been synonymous with progress, and therefore considered of interest to society in terms of providing electricity, water for irrigation of crops, regulating river flow and preventing floods and droughts<sup>1</sup>. This way, hydroelectric installations are one of the most widespread and long used means to generate energy in the world, especially in developing countries. However, since the end of twentieth century and during this twenty-first century<sup>2</sup>, the consensus

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<sup>1</sup> For a systematic study of the benefits to society from the construction of large dams, see J.A. MAZA-ALCAREZ, "La necesidad de construir presas", *Ingeniería del Agua* 4, vol XI, Dec 2004, pp. 445-454.

<sup>2</sup> In April 1997, under the auspices of the World Bank and the International Union for Conservation of Nature (IUCN), representatives of different interests met in Gland, Switzerland, to discuss highly controversial issues related to large dams. The workshop brought together 39 participants from governments, private sector, international financial institutions, civil society organizations and people affected. One of the adopted proposals at the meeting by all parties was to work together to form the World Commission on Dams (WCD), whose task would be to: review the effectiveness of large dams, as a mean to promote the development and evaluate alternatives for the use of water and energy; develop internationally acceptable criteria and the creation of appropriate guidelines and standards for planning, design,

on hydroelectric plants —which previously underpinned the rapid worldwide expansion of large dams— began erode, largely due to the perception of their harmful effects on rivers' ecosystems. As a result, it was the process of decision-making on dams began to take into account not only their economic impact, but also other possible side effects of a social and environmental nature<sup>3</sup>.

That is: the use of hydroelectric power is not without environmental controversy. While on the one hand they are considered a clean form of energy and a renewable source, on the other several voices have recently pointed to their harmful environmental impacts, which include biodiversity loss and other negative impacts on wild life.

To try to correct or mitigate as far as possible the environmental damage caused by the use of these large facilities to tank river waters, various solutions have been proposed, such as the reduction of water consumption and the efficient use of electricity; greater efficiency in the production and transportation of electricity; the reduction of sedimentation in the reservoirs by means of reforestation and construction works to retain siltation in the basin; constructions to recharge underground aquifers; generating background discharges for the removal of sediments; undertaking environmental impact studies in

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evaluation, construction, operation, inspection and dismantlement of dams. WCD started in May 1998, under the chairmanship of Professor Kader Asmal, then Minister of Water Resources and Forestry of the Republic of South Africa. Its members were selected to represent a diversity of regions, expertise and perspectives of different interests affected by dams. WCD, *Dams and Development: a New Framework for Decision Making* (2001).

<sup>3</sup> In the report *Dams and Development: a New Framework for Decision Making* has been identified among others the adverse effects caused by the construction of large dams, in which the costs of this kind of construction is beyond the initial budgets. The benefits are lower than anticipated, both hydroelectrically and in urban and industrial water supplies and in flood control, but particularly on irrigation, that have severely damaged the sustainability of rivers and aquatic ecosystems. Millions of people were forced to leave their land. Their construction and their effects often lead to an uneven distribution of costs and benefits among regional and social sectors, and ultimately they represent a mortgage unacceptable for future generations. An analysis of such problems and possible measures for their mitigation can be found in J.A. MAZA-ALCAREZ, *op. cit.*, pp. 449-453.

order to understand the damage and then carry out the necessary actions to minimize or control it; the encouragement of the participation of those affected by the decision-making process; and periodic inspections; implemented along with enforceable incentives and sanctions<sup>4</sup>.

At the European level, the Water Framework Directive (2000/60/CE) and the Energy Taxation Directive (2003/96/CE) foment hydraulic power as one of the most important sources of renewable energy to be used, to which are provided incentives, mainly through economic instruments and fiscal measures. However, in practice, countries have chosen to include in their tax systems ecological taxes, which begin to develop as a new category that focuses specifically the environmental damage caused by certain facilities used in production processes.

But are these measures sufficient or it would be advisable for governments to complement them with the use of the economic instruments, such as taxes? And, if such economic instruments are indeed appropriate, how would an environmental tax on the environmental damage caused by dams be articulated, and who would be called to pay it?

Given this context, this paper analyzes the applicability of environmental taxes as a means to mitigate and redress the negative effects on natural resources generated by hydroelectric installations. It does so by examining the case of the regulatory review of Law 15/2008, of December 19, that concerns to the environmental tax on damage caused by certain uses and exploitation of water storage, created by the Autonomous Community of Galicia in Spain. Furthermore, as a result of this new tax, it is analyzed that developing countries face a relevant choice, one that is also influenced by social-political and economic factors: whether to select hydroelectric power as a sustainable method to generate energy or whether it should be replaced by another more suitable and environmentally friendly process.

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<sup>4</sup> To these actions should be added the necessary cooperation among environmental specialists, dams designers and those affected, drawing special attention to the «control and continuous information, and accurate regarding the efficiency and effectiveness of the mitigation measures» [*ibid.* 453].

The new hydroelectric tax that is being implemented in the Autonomous Community of Galicia tries to correct these negative effects and shift the cost to the operators that generate them, which in some way contravenes the provisions of the mentioned Directives, because instead of encouraging this type of energy production, the tax instrument tends to discourage this type of installation. We must add that the objective of internalizing the negative social costs, which presides the creation of these fiscal figures, is transferred to private agents, who will, ultimately, support the fiscal burden arising from such instruments, as a result of the price impact from producers to consumers. Consequently, the creation of new tax may promote a more rational use of natural resources, curtailing their excessive exploitation; but may also discourage one of the cleanest ways of efficient energy production in existence.

For emerging countries, the standard adopted by the European Union may serve as an example, by generating a reasonable economic impact while providing ample environmental protection, and could thus serve as a way to embrace the international agreements on natural preservation.

## **2. The tax on environmental damage caused by the hydroelectric use of large dams**

It is with this new awareness of the environmental damage caused by large dams in mind that Law 15/2008 was approved, establishing a «tax on environmental damage caused by certain uses and exploitation of water reservoirs». With this law, the Galician Autonomous Community has decided that the hydroelectric industry—which has a significant presence in its territory—must compensate part of the cost that their production processes have on their environmental surroundings.

The Galician legislator has not subjected to taxation the activity in itself, neither the installations that are used for their development, but instead has linked the tax to adverse environmental effects «caused on the flora and fauna of the riverbeds, the quality of water and on riverbanks and valleys associated with the fluvial ecosystem, as a consequence of the activities that use water reservoirs».

This law is framed by the constitutional provision to impose taxes of extra-fiscal nature, based on the polluter pays principle. These taxes levy the environmental damage caused by certain human activities on

the natural resources, as a means to supplement financial funds of some Autonomous Communities that, *stricto sensu*, have no legislative powers to tax property, facilities or the activities in themselves. This formula, commonly used to create new autonomic taxes on certain activities or goods for the environmental damage caused, or likely to be caused, has generated many discussions regarding to the possible invasion of the competence of local authorities, which the Constitutional Court had to ultimately settle<sup>5</sup>.

However, this new tax in Galicia constitutes a novel use of this framework, bearing as it does on an activity that, from the environmental standpoint, has traditionally been considered one of the best options to satisfy the energy needs of society, to the point of occupying a main place among the so-called renewable energies, being considered, within this group, the one that best ensures a constant supply and greater quality of energy<sup>6</sup>.

Indeed, the European Union, in its energy policy, places such an emphasis on a greater use of renewable energies<sup>7</sup> that one might have expected the adoption of fiscal stimuli and incentives for hydroelectric plants, rather than the adoption of taxes and the associated disincentives.

### **2.1. Framework competence for the creation of environmental taxes by the Autonomous Community of Galicia.**

The Spanish Constitution (SC), in order to guarantee the financial autonomy of the regional governments recognized in its art. 156.1,

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<sup>5</sup> Constitutional Court Sentence (CCS) 37/1987, march 26.

<sup>6</sup> Indeed, the non-emission of CO<sub>2</sub> and other greenhouse gases, and the non-consumptive use of water converted to hydroelectric energy in a so-called renewable energy, and should precede other non-clean energies. Authors, as M.V. CARPI ABAD, argue that for this reason, hydroelectric power should, in the Hydrologic Basin Plans, have a prior place the hierarchy of uses, concretely should be in second place, behind the supply of populations (M.V. CARPI ABAD, *Aprovechamientos Hidroeléctricos: su Régimen Jurídico-Administrativo*, 2002, p. 122).

<sup>7</sup> The European Commission proposes the revision of the Directive on taxation of energy products and electricity (Directive 2003/96/EC) to promote the use of renewable energy. In the same vein, the Commission in its Green Paper *on European Strategy for Sustainable, Competitive and Secure Energy* (COM, 2006, pp. 105 and ss.) clearly chooses the use of these clean energies.

attributes to the Autonomous Community a number of resources, including among them the possibility to establish taxes in its territory (art. 157.1 SC). However, this possibility to establish and collect their own taxes, fees and contributions must be exercised within limits. On the one hand, there is the requirement of a double competence: the object of the tax must relate to the material competences granted to these regional entities are recognized (competence *ratione materiae*); and, on the other hand, the prohibition of double taxation, which precludes the creation of autonomous taxes on events previously taxed by the central State. Additionally, the regional governments must compensate local government should the latter's revenues be reduced or diminished in their potential future growth when the *ex novo* tax instruments recognized in the art. 157.1 SC falls on the matters that the Legislation of the Local Regime reserves to local authorities.

#### *2.1.1. Competence ratione materiae of the Autonomous Community of Galicia*

In terms of the first limitation in the exercise of the powers of taxation by the Autonomous Community, it is clear that this cannot be used in any way to invade or overwhelm the distribution of competences on the different matters that the Magna Carta<sup>8</sup> establishes. Since taxes have either a fiscal or extra-fiscal nature, they are projected on different material areas (housing, employment... or, in the case of the new Galician tax on environment, water and energy). Thus, it is not sufficient to consider the competence in tax matters alone. Rather, the effects that may be produced on the economic sector or social reality on which the tax applies must also be attributed to this level of government (double competence theory).

As recognized in arts. 148.1.9 and 149.1.23 of the SC and art. 27 of the Statute of Autonomy of Galicia, the Autonomous Community of Galicia has jurisdiction to dictate rules on environmental protection, in addition to the central State.

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<sup>8</sup> I. JIMÉNEZ COMPAIRED, "La fiscalidad ambiental en Aragón", *NUE*, n. 289, 2009, p. 6.

Applying this competence, the Galician regional government approved, among other provisions, Law 1/1995, January 2, for environmental protection; Law 7/1997, August 11, protection against noise pollution; Law 9/2001, August 21, for nature conservation; and Law 8/2002, December 18, for the atmospheric protection of Galicia. On the matter of the water environment, it approved Law 5/2006, June 30, for the protection, conservation and improvement of Galicia's rivers. This declared the conservation of the natural fluvial patrimony a priority concern of Galicia, including the biodiversity of the flora and fauna of Galicia's rivers. Additionally, it established the obligation of the Galician public administration to ensure their protection, conservation and improvement.

Competence conflicts could arise in what concerns to the possible violation of the basic competence in the energy matter, recognized by art. 149.1.25 of the SC, under which it «corresponds to the State the establishment of the guidelines to determine the level of development and efficiency of each energy source, and how to precede its coherent management». It could be argued that the real sector in which is projected the Law we are analyzing here is essentially the protection of the environmental value of the rivers, and only tangentially does it project on the energy production. However, the implementation of the new Galician tax may conflict with the guidelines of the central state: when it penalizes the production of hydropower generated in Galicia by large dams, this could be reflected in the quantitative levels of energy production and be reflected, ultimately, in the electricity tariff. This is relevant for, as Law 5/2006 itself makes clear, «Galicia, with only 5% of the territory and 7% of the population, produces 25% of all electricity generated from hydraulic origin in the Spanish state».

The Constitutional Court had the opportunity to pronounce itself on this issue in its Sentence 168/2004, October 6 of 2004, legal bases 11. In its decision, the Court pointed that Law 54/1997, November 27, which regulates the electricity sector, in its art. 17.3, expressly establishes the possibility to implement a territorial supplement on the bills that must be satisfied by energy consumers in the event that the electrical activities «are charged with taxes of autonomic or local nature, whose quota



were obtained by non-uniform rules on the national territory». As it concludes in this decision, this legislative prevision serves to articulate that the «basic state legislator assumes with absolute normality the existence of autonomic and local taxes on electricity and gas energies, so long as they respect the principles proclaimed in the arts. 6.2 and 6.3 of the Organic Law of the Autonomous Communities (OLAC<sup>9</sup>), ensuring that the exercise of territorial taxation power does not jeopardize the uniqueness of the tariffs system».

Following this reasoning and through the approval of Laws 54/1997 and 34/1998, the state legislator has supported its own competence capability with the autonomous taxation power, when exercised in the sub-sectors of electricity and gas. Nevertheless, the importance of the Galician hydroelectric sector at the central state level should not be ignored. As previously stated, it produces 25% of Spain's hydroelectric energy. Thus, a tax burden on the environmental damage caused by certain uses of water reservoirs could have an impact beyond the boundaries of the Autonomous Community of Galicia if significantly increases the price of this type of energy production overall. Furthermore, this new tax penalizes only those firms that in their production processes use large dams, ignoring the environmental damage caused by the electricity production installations from small hydraulic plants and wind parks, and thus indirectly affects the organization of the energy production process.

### *2.1.2. Tax competence in the Galician Autonomous Community*

As mentioned previously, the Autonomous Community of Galicia has the power to establish and collect its own taxes, as stated in the art. 133 and art. 157 of the SC, and in the art. 51 of its Statute of Autonomy. This power includes the ability to create environmental or other extra-fiscal taxes, as determined by the Constitutional Court Sentence (CCS) 186/1993, June 7, which pronounces that «constitutionally there is no objection to, in general, assign extra-fiscal purposes to the taxes and that, more particularly, the Autonomous Communities may levy taxes

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<sup>9</sup> Organic Law 8/1980, September 22.

of this nature, although it has to be undertaken within the framework of competences assumed and respecting the requirements and principles derived directly from the Constitution (art. 31), the Organic Law that regulates the exercise of its financial powers (art. 157.3 SC) and the respective Statutes of Autonomy»<sup>10</sup>.

Therefore, the tax competence of the CCAA is not absolute, but subjected to a number of limitations, brought by arts. 25 to 29, and 87 to 90 of the EC Treaty<sup>11</sup>, arts. 31, 45.2, 138 and 139 of the SC<sup>12</sup>, and arts. 6 to 9 of the OLAC<sup>13</sup>.

<sup>10</sup> CCS 186/1993, June 7, legal basis 4.

<sup>11</sup> The art. 25 prohibits the establishment of customs duties on imports and exports, and measures of equivalent effects between Member States. On the other side, the arts. 28 and 29 of the EC Treaty prohibits quantitative restrictions on the establishment of intra-community trade and measures of equivalent effect. Finally, the art. 90 prohibits the establishment of tax barriers on non-nationals.

<sup>12</sup> As to the non-discrimination in tax matters for territory reasons, the Constitution does not require that all contributors have the same tax obligations throughout the territory, because this would prevent the financial autonomy brought by the art. 156.1 SC, and would make impossible the exercise of the tax powers by the Autonomous Communities, recognized by the arts. 133.2 and 157.1.b) of the SC (CCS of October 4, 1990, and CCS of June 7, 1993). In the words of Constitutional Court, autonomy means precisely the capacity that each nationality or region has to decide when and how to exercise its own powers, under the Constitution and the State. Such inequalities result from the legal position of citizens in each of the different Autonomous Communities, and this does not mean a necessary violation of the arts. 1, 9.2, 14, 139 and 149.1.1<sup>a</sup>, neither the arts. 31.1, 38 and 149.1.13<sup>a</sup> of the SC, because «these provisions do not require an uniform legal treatment of the rights and duties of the citizens, in all types of matters and on all territory, which would be strongly inconsistent with the autonomy, but at most (...) an equality of fundamental legal positions» (CCS 37/1987, legal basis 10).

<sup>13</sup> Undoubtedly, the biggest hurdle to be overcome by the Autonomous Communities, when establishing their own environmental taxes, is the double taxation prohibition, stated in the art. 6 OLAC. It is prohibited any taxation on «taxable events charged by the State» (art. 6.2 OLAC) and, on the other hand, it is prohibited the taxation on matters that the Local Regime reserves for the Local Corporations, except in cases where there is a legislation prevision (art. 6.3 OLAC). These limits have been redirected to their reasonable limits by the Constitutional Court, which has clarified that the first prohibition is not intended to prevent the establishment of taxes by the Autonomous Communities on matters and sources of wealth already taxed by the State, but only in case of duplicity of taxable events (CCS 37/1987, legal basis 14, and CCS 186/1993, legal basis 4). Besides, the art. 6.3 OLAC forbids any kind of

## 2.2. Object and foundation

The tax on environmental damage caused by certain uses and exploitation of stored water is a real nature tax, with an extra-fiscal purpose that charges the «environmental damage caused by the implementation of specific activities that use stored water» (art. 2, Law 15/2008).

However, despite its denomination, it is not designed to tax the use of water as a mean to promote a more rational use of this scarce resource. Rather, it taxes the environmental damage «caused on the flora and fauna in the rivers flows, the quality of water and on riverbanks and valleys associated with the fluvial ecosystem, as a result of the implementation of specific activities that use water reservoirs», as stated in its preamble. For this reason, the denomination and some of the provisions of the regulating law should abandon any reference to the use of water stored, because the environmental damage, as we will later demonstrate, is not directly related to this use, but instead, related to the effects of the reservoir and the consequent stalling that it causes in the river flow and in the fluvial ecosystem.

The basis of this financial instrument is the polluter pays principle and the principle of correction of externalities created by industrial activity. These foundations pretend to assign the environmental costs, which generally are supported by the society, to their immediate generators<sup>14</sup>.

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overlapping between a source of wealth taxed by a local tax and a new autonomic tax, without the prior legislative prevision (CCS 289/2000, November 30, legal basis 4). For this reason, when the autonomous tax has the purpose to charge the environmental damage generated by the activity or facility, no reproach can be made by the art. 6.3 OLAC, because a different taxable matter is being charged from those of the local taxes, that charge the ownership of property and economic activities (CCS 179/2006, legal basis 6). It will be the tax structure that will lead to the conclusion if it is being charged, or not, a different sources of wealth taxed by the local government.

<sup>14</sup> For more information on the polluter pays principle, see C.J. BORRERO MORO, *La Tributación Ambiental en España*, 1999, p. 129; A.G. CHUECA SANCHO, ««Quien Contamina, Paga», en el Derecho de la Unión Europea», *RDUE*, n. 15, 2008, pp. 183-196; J. TOLEDO JÁDENES, «El Principio «Quien Contamina, Paga» y el Canon de Vertidos», *RAP*, n. 112, 1987, pp. 289-336; T.J. LÓPEZ-GUZMÁN GUZMÁN *et al.*, «Financiación Autonómica e Incidencia Fiscal de los Tributos Ecológicos: una

The principle of internalization and recovery of costs related to the continental waters is established in the Law 5/2006, June 30, for the protection, conservation and improvement of Galician's rivers<sup>15</sup>, and in the Water Framework Directive<sup>16</sup>.

## 2.3. Elements of the tax

### 2.3.1. Taxable event and non-taxability cases

According to the art. 6 of the Law 5/2006, the taxable event is the «realization of industrial activities through the use or exploitation of water reservoirs, where such use or exploitation alter or substantially modify the natural values of rivers, particularly the flow rate and the velocity of water in its natural course».

However, not all environmental changes are considered relevant to demand this tax, but only those made by large dams. The Law establishes that it will only be considered the environmental damage resulted from the industrial activity that uses water stored in dams that meet one of the following conditions:

- a) that its height exceeds fifteen meters, measured from the lowest part of the general foundation area to the top of dam, or
- b) that its height is between fifteen and ten meters, and has one of this technical features:
  - b.1) top of dam length over five meters
  - b.2) the capacity to dam more than one million cubic meters of water, and
  - b.3) higher discharge capacity of 2,000 cubic meters per second.

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Reflexión en Torno al Principio de «Quien Contamina, Paga», *RER*, n. 78, 2007, pp. 401-408; A. ARNER GUERRE, "Ayudas Públicas en la Protección Medioambiental: el Caso de la Gestión de Residuos", *AIS*, n. 6, 1997, pp. 139-150; P.M. HERRERA MOLINA, *Derecho Tributario Ambiental: la Introducción del Interés Ambiental en el Ordenamiento Comunitario*, 2000, p. 70.

<sup>15</sup> This Law declared, as a priority interest to Galicia, the conservation of natural fluvial patrimony, including the biodiversity of flora and fauna of the Galician rivers, establishing the obligation of the government of Galicia to ensure their protection, conservation and improvement.

<sup>16</sup> Directive 2000/60/EC.

Only when the dam has the characteristics required by the law is considered as an industrial activity that causes significant environmental harm, therefore justifying the levy of the tax. Also, in order to delineate negatively the taxable event and to avoid doubts the art. 7 list activities that are considered of non-industrial use or of public utility, in which, despite the use of water reservoirs, is not considered made the taxable event: the supply of populations, agricultural activities, aquaculture, recreation, and navigation and water transport.

This sustains the inadequate definition of the taxable event and the unwise choice for the tax's name, because it has nothing to do with the volume or quantity of water used in the development of the industrial activity. Instead, it is related to the employment in the production process of an installation that for its dimensions is presumed to cause and important alteration in the natural values, flow and velocity of rivers.

### 2.3.2. *Taxpayer*

Considering that the taxable event only may occur when using large dams for hydroelectric power production (although there is nothing that prevents to consider the taxable event done in the use for cooling thermal power centrals and other industrial uses), taxpayers are those that realize the taxable event, assuming that the industrial activity is made by the titular of the concession for the industrial use or exploitation<sup>17</sup>. If the taxpayer is not the same as the concession holder, this one has joint responsibility.

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<sup>17</sup> The regulation on the hydraulic public domain, approved by the Royal Decree 849/1986, April 11, provides that any private use of the waters, except those that are required by law, requires administrative concession. The concessions will be granted considering the rational joint exploitation of the surface and groundwater resources, according to the hydrological plans forecasts, on a temporary basis and no superior to seventy-five years. This concession is a discretionary power, but the decision shall be reasoned and adopted in function of the public interest, and can be reviewed at any time. Also, note that, for the granting of the administrative concession for the exclusive use of water, the power production is the third one in the general priority order: 1) supplying in villages for the people and industry of low consume; 2) irrigation and agricultural uses; 3) industrial uses for electricity production, 4) other industrial uses; 5) aquaculture; 6) recreational uses; 7) navigation and water transport; 8) other uses. In case of incompatible uses, will be preferred the ones with greater public utility or, in general, those that introduce technical advances, which result in a lower consumption of water or maintains or improves its quality.

Therefore, the direct producers of the damage include in their industrial activity the costs related to the environmental degradation caused (polluter pays), instead of the assuming of this cost by society.

However, when the reservoir is intended for other uses along with the production of electrical energy, these adverse effects are also produced by these other activities, for which the law establishes non-taxability, precisely because they gather conditions of public interest, that excludes them from taxing, being in this case the costs of general nature assumed by the society.

Although the recognition by the legislator that these activities are of public interest, it should not be ignored that the multiple destinations given to this waters (eg, supply for populations, irrigation and other agricultural uses) and the need of authorization to conduct a project of this nature, must be considered when defining the elements of quantification, as an mean to achieve tax justice.

In addition, the Hydrological Basin Plans must necessarily contemplate the need to reserve certain flow to maintain or recover the natural environment (ecological abundance)<sup>18</sup>, resources reserve, and that should be also taken in consideration when quantifying the tax base.

Given that the tax levies on the environmental damage caused by the activities that use in their production process installations that cause a significant negative impact on the natural fluvial environment, the impossibility to quantify with reasonable certainty the amount of environmental cost<sup>19</sup> has led the Galician legislator to use for the determination of the tax base, objective magnitudes related to the impact on the environment.

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<sup>18</sup> Some authors justify the need for this flow, because of the need to preserve autochthones species of flora and fauna, to conserve fish stocks, to maintain the aesthetic quality of the landscape, or to protect sections of cultural and scientific interest. D. GARCÍA DE JALÓN LASTRA, "Regímenes de Caudales Ecológicos o de Compensación: el Método IFIM o del APU", AA. VV., *Conferencia Regional del Agua: Jornada sobre Caudales Ecológicos y Caudales de Mantenimiento*, 2007, pp. 9 and ss.

<sup>19</sup> Represented by multiple factors, such as the alteration and loss of biodiversity, modification of the flow and quality of water, changes in the flow of sediments and nutrients, loss of fertile soil, disappearance of plant and animal species etc.; all these damages or adverse impacts on the river are produced in a greater or lesser level by all dams, regardless their destination or use.

Therefore, for the tax base is considered the maximum volumetric capacity of the reservoir (measured in cubic hectometers - hm<sup>3</sup>), located entirely or partially<sup>20</sup> in the territory of the Autonomous Community of Galicia. In the event that one or more uses share a common reservoir taxed, the basis for each of them shall be determined in proportion to the flows granted.

The tax base does not consider the use of water stored by the taxpayer, that would require computing the hm<sup>3</sup> of water used in the production process, but instead considers as parameter the maximum volumetric capacity, which does not allow graduating the intensity with which the taxable event takes place.

This can be contrary to the principles of tax justice, because it sacrifices the possibility for the taxpayer to perform a measurement more accurate to the reality, excluding from the calculus of the tax the other possible alternatives/purposes (supply, irrigation, aquaculture etc.) and ecological abundance. Moreover, this does not happen in cases where there are a number of concessions for the hydroelectric use of the same dam, where the tax base is modulated in proportion to the flows granted. Indeed, if the volumetric capacity of the reservoir can be determined in this case by the proportion of flow, there is no reason to prevent that the same rule to be applied to exclude from taxable event the authorized flows for other uses and ecological flows.

Meanwhile, the quota is the result of applying a flat rate (800 € per hm<sup>3</sup>) to the tax base. Considering that the height of the dam is a factor directly related to the magnitude of environmental damage, the resulting quota<sup>21</sup> will be corrected by applying a weighting factor that considers the height (jump gross of the exploitation) and the hydroelectric power

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<sup>20</sup> In accordance with the principle of territoriality, only reservoirs located in the Galician territory can be taxed. If the dam exceeds the referred territorial boundary, the tax base is constituted by the portion of the capacity that corresponds to the waters in the Galician territory.

<sup>21</sup> The quota, obtained by the application of the tax rate to the tax base, is multiplied by a coefficient derived from applying the formula  $(1 + a - b)$ , where:  
a = is the result of applying the following scale to the jump gross (measured in meters) from the intake quota and, in its absence, from the top of the dam to the point of restitution and, in its absence, to the bed of the reservoir : Types of Jump Gross: Up

production, although this may mean a reduction no greater than 25% than from the initial quota.

Therefore, two factors are set to try to influence the behaviour of the taxpayer, producer of environmental damage, to take the necessary measures to reduce its harm: one factor is the jump gross, that will increase the tax, for its direct link with the largest negative environmental effect caused by reservoir withdrawal; and the other factor, which reduces the quota, is the greater hydroelectric power of the installations intended to generate electricity, because it implies in a better energetic utilization of the water before the same negative environmental impact.

As a result, it is intended that the taxpayer may consider appropriate, to decrease its tax burden, modifying its production processes by changing the take and restitution points of the water or by installing a higher power, which would result in a more efficient electricity production.

However, despite such incentives, there is no doubt that there is a risk that the producer may transfer the costs caused by the new tax to the final consumer, which would result in a rise in the tariffs.

#### *2.3.4. Tax period and accrual*

The tax created by the Galician Autonomous Community is designed as an accrual quarterly, in which the tax period coincides with the calendar quarter and the accrual will occur on the last day of the calendar quarter, except on the extinction of the concession, which will coincide with this date.

#### *2.3.5. Allocation*

The income earned by the application of this tax are earmarked for financing the actions and measures meant to prevention and protection of natural resources and the maintenance, repair and restoration of the environment, particularly the conservation of the Galician natural fluvial patrimony, directly or indirectly affected by the taxed environmental damage.

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to 30 m; From 30,01 to 100 m; From 100,01 to 300 m; From 300,01 to 600 m: From 600,01 m onwards. Per meter: 0,0001; 0,0005; 0,001; 0,01; 0,04

b = is the result of applying, if appropriate, the following scale of installed capacity of utilization, measured in MW: Types of power: Up to 200 MW; From 200,01 MW onwards. Per each MW: 0,0005; 0,001.



The purpose of this new tax is to have a redistributive nature, rather than merely collecting revenue, a characteristic that is present in the environmental taxes.

### **3. Lege ferenda proposals: a model to implement in developing countries?**

The Galician tax should be a mean to discourage or have elements in its quantification to incentive the reduction of pollution. In casu, the stimuli introduced (setting height and power as correction factors) does not seek a reduction of environmental damage caused by the dam, but rather tries to achieve a greater efficiency in the production of electric power. The legislator is aware that such considered factors will hardly encourage the operator to modify its production process, and even so, at last, this sector will pass the new cost generated by the tax on the final consumer. Therefore, it should be introduced clear environmental incentives, such as deductions for building equalizing reservoirs (that mitigate the possible oscillations of the volume downstream flow), stairs for the fish<sup>22</sup>, reforestation, etc.

Also, since the purpose of this new figure is to tax the environmental damage caused by large dams for hydropower production in the Galician Autonomous Community and not for the industrial consumption of water, as a scarce resource, it does not seem right neither the denomination nor the taxable event, because as it makes reference to the industrial use of water reservoirs, it is necessary that the determination of the quantification elements of the tax must consider the volume of water stored that the taxpayer has actually consumed.

Quite the contrary, the magnitudes used to calculate the tax base (maximum volumetric capacity of the reservoir) does not consider, at any time, the volume of water used in industrial activity, neither the authorized volumes for other possible uses to which they assign the water, nor seasonal fluctuations in level, nor ecological abundance. This could violate the principles of tax justice, fundamentally the principles of generality and equality of taxation, since one thing is that such uses

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<sup>22</sup> On the possibility to establish this kind of measure as obligatory, see M.V. CARPI ABAD, *op. cit.*, p. 122.

are considered not subjected to the tax, and another thing is that the volumes of water used for such purposes are included in the calculation of the tax base of the taxpayer.

The constructions of large dams are not only justified by the need to produce electricity, but also to regulate river flow to prevent floods and droughts, to supply cities or for irrigation. Consequently, it does not seem to be justified with the principles of generality, equality and economic capacity. This excludes, in the calculation of the tax base, the volume used for such purposes, which could integrate a formula that graduates the amount on the intensity that each one carry out the taxable event. Therefore, it is proposed as *lege ferenda* that the tax base is determined in function of the authorized volume, instead of the maximum volumetric capacity.

Regarding to the applicability of this new tax on developing countries, it is believed that environmental taxes are easily justified in cases where the damage is produced by polluting discharges or emissions. However, it does not seem reasonable when the tax object incurs on the economic activity or the installations used in the production process (generally levied by property and economic activities taxes). Also, if the potentially harmful activity to the environment is an industrial energy production, it must be considered the economic, social and political factors, because countries with industrialized economies have an increasing energy demand and have to consider the foreseeable fossil fuel dry out.

Therefore, in the growing need of energy and assuming that there is no generating source completely harmless to nature, governments must evaluate the conflicting interests and should prioritize those sources that generate less damage, while trying to discourage those less profitable from a strictly environmental point of view.

This penalty towards non-clean energy, can be achieved through fiscal instruments that, based on the polluter pays principle, enables producers of this kind of energy to internalize the environmental costs that of their production processes. However, the question remains: is hydroelectric power a clean energy, or is it a renewable energy production that should not be subject to such taxes that penalize extra-fiscal end with its production?

#### 4. Conclusions

The new tax approved by the Galician legislator, far from considering the large hydroelectric plants as a renewable source of energy, rather penalizes the hydroelectric companies that use large dams in their production processes. The legislator appears to be encouraging the use of other energy sources in Galicia, notably small hydroelectric centrals and wind farms, which are considered as cleaner sources of energy.

However, the tax base, calculated by the maximum volumetric capacity of the dam (and not by the authorized volume of water for the production of hydroelectric power), violates the principles of generality and equality of taxation, by not considering in its calculation other alternative uses of water reservoirs. In addition, the adopted tax provides weak environmental incentives, notably in terms of deductions of the taxable quantity through compensatory measures such as the building of equalizing reservoirs, stairs for the fish, reforestation, etc.

Moreover, the legislator has forgotten that these dams are not only intended for the production of electrical energy (essential for the economic development), but serve also to store and supply water for irrigation and people, to regulate river flows and prevent floods or droughts. These are all public interest reasons that discourage the introduction of a tax of such characteristics, which — in its current form — does not fully fit the typology of an eco-tax.

The applicability of a tax of this kind, in the way that it was designed, does not seem reasonable for developing countries. However, environmental taxation must be considered as an instrument for environmental protection in emerging economies, especially given the increasing demand of conventional energy production/consumption. Since there is no energy generating source that is completely harmless to nature, governments must evaluate conflicting interests and should prioritize those sources that best combine efficient energy production with minimal environmental damage.

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